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The invention concerns a stable product based on sea water, its preparation and its pharmaceutical, veterinary and cosmetic applications.

The works of René Quinton, and particularly his work entitled "Sea water, biological environment", established the marine origin of all animal organisms more than 75 years ago, thus showing that sea water is a true biological environment endowed with certain essential properties.

Typical sea water (the exact composition differs according to the conditions and the place of sampling) contains chlorine and sodium in a proportion representing approximately 84% of all dissolved components. Accordingly, the solution is extremely hypertonic.

Sulfur, magnesium, calcium and potassium together only represent about 14% of dissolved components.

Finally, a large number of components, such as bromine, iodine, iron, ammonium ion, manganese, silicon, carbon, lithium, gold, copper, silver and various other oligoelements together account for the approximately 2% remaining.

René Quinton also stressed the relative fragility of sea water. This means that sea water cannot be sterilized by the usual methods without becoming toxic, nor can it be concentrated by evaporation and then be generated through the addition of distilled water.

Sea water has been used in various therapeutic applications.

Thus, subcutaneous injections, either of sea water purified by filtration or of sea water rendered isotonic by the addition of sterile distilled water (Quinton's serum), have been administered with quite remarkable results for numerous conditions which manifest either externally or internally, such as erysipelas, shingles, herpes, ulcers, tuberculosis of the skin or bone, etc. More recently, the expansion of thalassotherapy, which uses sea water and marine algae baths, has demonstrated the benefits which are to be expected of the marine environment.

Unfortunately, these treatments entail the disadvantage that they cannot be performed anywhere except at the seaside, because, as René Quinton indicated, sea water degrades rapidly because of its fragility. Furthermore, to date, no processing was known which enabled the stabilization of sea water; the various agents which were tried gave rise to the degradation of sea water or even rendered it toxic, especially through the release of chlorine.

There is therefore a need for stabilized sea water which preserves the majority of its beneficial properties, can be preserved for long periods of time, and can therefore be transported and used in places far from the seaside.

The objective of the present invention is to provide stabilized sea water in the form of a product with a certain viscosity which is easy to apply externally, and which includes, besides the sea water, a gelling agent which is sodium alginate and a germicide which is benzalkonium chloride.

The invention also concerns a process for the preparation of such stabilized sea water, according to which benzalkonium chloride is first added to previously filtered sea water, and sodium alginate is then added to the resulting mixture. It is important to add the germicide to the sea water before adding the gelling agent, as otherwise it would be practically impossible

to obtain a homogeneous distribution of the germicide in the product formed by the sea water and the sodium alginate.

Sodium alginate is a colloid available in commercial trade, for example, in powdered form under the trade name CECALGINE BV-T 100. It can be used in quantities, for example, between 40 and 80 grams per liter of sea water, according to the desired degree of viscosity. The quantity used will most often be between approximately 50 and 70 grams.

Benzalkonium chloride is also available in commercial trade, for example, under the trade name CEQUARTYL A 50, which is an aqueous solution consisting of 50% benzalkonium chloride. It is possible, for example, to use between 0.5 and 1.5 cc of CEQUARTYL A 50 per liter of sea water.

Benzalkonium chloride is a mixture of alcoyldimethylbenzylammonium chlorides. This product is soluble in water of any degree of hardness and is compatible with the alkaline metal salts which are present, in a diluted state, in sea water. This product is an extremely strong germicide in very small quantities, and does not irritate the skin or mucous membranes at the weak doses indicated.

Surprisingly, the Applicant found that benzalkonium chloride was suitable for the stabilization of sea water. By contrast, other ammonium compounds which had been tried had given rise to effects (decomposition, bad odor) which rendered them unsuitable for the purpose intended.

The principal pharmacological properties of the product according to the invention, in its basic composition which shall be indicated below, are as follows: no toxicity despite the germicidal effects cited; hypertonicity – that is, the ability to easily and totally pass through the skin when applied to it; vasoconstrictor effects; stability of properties which particularly enables use after storage.

These properties, combined with those of sea water, which the viscosity of the product, applied to the skin, allows to remain in contact with the skin for prolonged period of time, render the product useful as is, without the incorporation of additional products, for the treatment of numerous pharmacological conditions, such as eczema, as well as for the treatment of superficial wounds, sunstroke, acne and the like.

At the same time, it is especially useful as an excipient or a vehicle for various pharmaceutical products (formulations for dermatological use) or cosmetic products (sun creams, makeup or makeup remover, creams containing extracts of marine algae, etc.) intended to reinforce its action.

#### Example 1: Basic product

The following are mixed in the indicated order:

|  |   |
|--|---|
| Filtered sea water                     | 1000 ml   |
| Benzalkonium chloride, in 50% solution | 1 ml  |
| Sodium alginate                        | 40 to 80 g (according to the desired consistency) |

This product has the appearance of a gel. It is applied on the skin as a pomade, in greater or lesser quantities. The applications may be repeated. The product is practically colorless and older less.

With this composition, a triple action is obtained:

- An immediate osmotic effect at the level of the skin, due to the extreme hypertonicity of the product.
- A more prolonged activity of the constituent elements of the product.
- A prolonged bacteriostatic, bactericidal, sporicidal, anti-fungal and deodorizing effect.

The composition rapidly improves the state of the skin, restoring its tone, its flexibility, its softness and its natural means of defense. This is particularly effective for ill people confined to bed and older people, in whom the elimination of itching and the risk of eschars is observed.

The composition is just as useful in veterinary medicine. For example, it has enabled the treatment of inflammation of the postern, frequently observed in saddle horses.

#### Example 2

The following are mixed in the indicated order:

|  |   |
|--|---|
| Filtered sea water                     | 1000 ml   |
| Benzalkonium chloride, in 50% solution | 1 ml  |
| Polyvinylpyrrolidone iodide            | 1 to 10 ml  |
| Sodium alginate                        | 50 to 70 g (according to the desired consistency) |

In the application of this product to the skin, the component of polyvinylpyrrolidone iodide progressively releases iodine at the level of the skin, eliminating the risk of sensitization to iodine. This action is maintained by the percutaneous nature of the product.

The bactericidal, sporicidal, anti-fungal and deodorizing effect is reinforced in such a way that this composition enables the obtaining of rapid and impressive results in the case of infected wounds, as well as in the treatment of skin diseases such as folliculitis and acne.

Eczema, herpes and burns have also been treated with success.

The composition is also useful in the treatment of peripheral vascular disorders, especially when the iodine cannot be ingested by mouth.

The anti-cellulitis action of the product is also pronounced.

The product is used for local, regional or whole-body massage, using a small quantity each time and ensuring the penetration of the product by massage. These massages may be repeated several times a day, as required.

Other simple or compound, medicinal or non-medicinal components of an extremely diverse nature may be incorporated into the basic product, as will be evident to specialists in both human and veterinary medicine. It is not possible to provide an exhaustive list of such components.

#### Example 3: Product for cosmetic use

Between 1 and 10 grams of sodium hyposulfite are added to the product listed in Example 1 or Example 2.

Example 4: Beauty cream

10 grams of sweet almond oil, castor oil or cade (juniper) oil, or a mixture of two or three of these oils, are added to the product listed in Example 1 or Example 2, with a view to forming and emulsion.

The various examples are not intended as limitative.

A coloring agent or a perfume essence may also be added.

## Patent Claims

1. Stabilized sea water in the form of a viscous product, wherein said stabilized sea water contains sodium alginate as a gelling agent and benzalkonium chloride as a germicide.
2. Stabilized sea water according to Claim 1, wherein said stabilized sea water contains between 40 and 80 grams of sodium alginate per liter of sea water.
3. Stabilized sea water according to Claim 1, wherein said stabilized sea water contains between 0.5 and 1.5 cc of benzalkonium chloride in 50% solution per liter of sea water.
4. Process for preparation of stabilized sea water in the form of a viscous product, wherein benzalkonium chloride is first added to previously filtered sea water, and sodium alginate is then added to the resulting mixture.
5. Composition for therapeutic use in human or veterinary medicine, wherein said composition contains stabilized sea water according to any of Claims 1 to 3.
6. Composition according to Claim 5, wherein said composition also contains polyvinylpyrrolidone iodide.
6. Composition for cosmetic use, wherein said composition contains stabilized sea water according to any of Claims 1 to 3.